

Open Space



Design of the emergency room of the future

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Executive Summary

Every year, more than 115 million patients enter emergency rooms (ER) at hospitals around the U.S. More than three-quarters of them leave with an impression of what happened – or what should happen next – that doesn't match what their emergency care team would want ^[1]. Too often, patients experience long wait times during periods between treatment and while waiting for discharge. This experience is often described as wasteful or boring and is not adequately used or valued by healthcare providers.

Due to the severe circumstances in which an ER typically operates (i.e. long waiting times, lack of staff and inefficient processes), patients are often inadequately informed and unaware of their condition and corresponding treatment. This creates a sense of discomfort and, more importantly, may result in complications upon leaving the ER. without treatment.

These situations clearly indicate that ER teams need a better way of making sure patients understand their condition in the ER, provide better communication and activities for patients during wait times, and improve educational information before patients go home.

In order to facilitate communication between patient and healthcare provider, the ER should take advantage of Information Technologies (IT) that focus on and shape the patient experience from entrance to exit. Open Space is an interface that helps to achieve that objective by providing the patient with tools for health education, current news concerning their care, and entertainment at times that are available when they need a break from the boredom.

Problem definition

There is deficient communication between healthcare providers and patients in the ER. This dearth of information can cause anxiety to patients and may result in complications in following their post-ER care. It is not that healthcare providers don't care, but that too often, there are too many patients to give all the attention that patients deserve. There are several more reasons to the problem:

- Technical language may confuse patients
- Patients in distress and pain, not the best circumstances to listen to the hospital staff at the time of triage or treatment
- Lack of tools that facilitate communication with patients in a more basic level

Many times, patients feel they are without any idea of what is happening in their surroundings and in their health condition. Waiting times tend to be long in the ER and usually there are not any types of positive distraction or entertainment in the hospital. This time can be used more effectively. Additionally, given the tools that are available today, providers can leverage video and interactive programs to fill the space typically required by activities in person, thus freeing some time from basic education in order to raise their level of care and work with a more informed and engaged patient.

Related work, evidence and research

Several sources of information were consulted to develop this project. Most of them consisted in personal interviews with healthcare professionals and two site visits.

The main observations listed by the healthcare professionals regarding the communication problem are the following:

- Even when there are computerized documentation systems at some ERs, these are for the use of staff and patients never see any of them. Those systems are inadequate to be used as a tool to show some relevant

information to patients, but valuable information can be pulled out from them to explain patients the basic things about their condition ^{[2], [5]}

- It would be very useful to be able to record some medical information when talking to patients at the bedside, to be able to show them the story of their current visit to the ER, their medication reconciliation, vaccination forms, etcetera. A tool with these features would improve communication and patient education ^[3]
- In providing education to the patient, some useful topics should be showed such as hospital policy, time for the next medicine doses, etc ^[4]
- To add value to the time that patients spend waiting in the ER, some entertaining or educational material could be showed to them. Such material could address the most common health problems such as diabetes, obesity, smoking cessation and benefits of diet and exercise ^[3]
- It is necessary to have means of family and patient interaction given the time they spent in the hospital ^[3]
- If healthcare providers use a visual tool to explain discharge instructions to patients, these tend to be better remembered and understood ^[3]

Solution approach

Information technologies can be leveraged as a tool in an ED environment for patients and providers. This tool needs to create a portal for patients to access while they wait in triage and treatment rooms that will also create a sense of continuity and added value to their temporary space in the Hospital or Clinic. We believe that a portal can typically be displayed on the wall in most patient rooms and could be controlled via remote or infrared pointer. We call this portal “Open Space.”

Open Space is an interface that:

- Facilitates communication between patients and healthcare providers
- Provides information to patients about their current visit to the ER
- Educates patients about their medical condition and planned procedures
- Offers entertainment to the patient and/or family who are waiting

Open Space is composed by two “modes”: the first one is for the use of patient in the form of self-service and the other is for the joint use by provider.

In self-service mode, patients are able to follow the ER process they are likely to follow according to their condition. (A scrolling information ticker occurs at the top of the screen). They also receive information about the next steps and the estimated time they will spend in each step of the treatment until discharge or admission (at the bottom of the screen). Additionally, patients can watch videos related to their illness automatically culled based on the patient’s treatment and symptom parameters. In addition, one may also start a session in Second Life to meet virtual support groups or tour the hospital and interact with staff that are online. Other features include the option to play games or simply watch television. Vital signs are displayed (on right), when available as well as the time of the next dose of medicine. Refer to Figure 1.



Figure 1. Open Space - Self-service mode

The information given to patients in this mode is linked to the hospital's computerized system. Thus, any update in the hospital's system will update the options shown in Open Space. While we propose these options, we do not see this interface as the end of what should be great potential. There are many ways in which this interface can be implemented and should be thought of in terms of how patient care can be improved and measured.

The second mode allows the healthcare provider to pull relevant information out of the hospital's computerized system in order to explain in more detail the causes and treatment of their condition (i.e. X rays, medication reconciliation, vaccine information, lab tests, etcetera). This mode also enables the provider to enter information at the bedside. Refer to Figure 2 below.

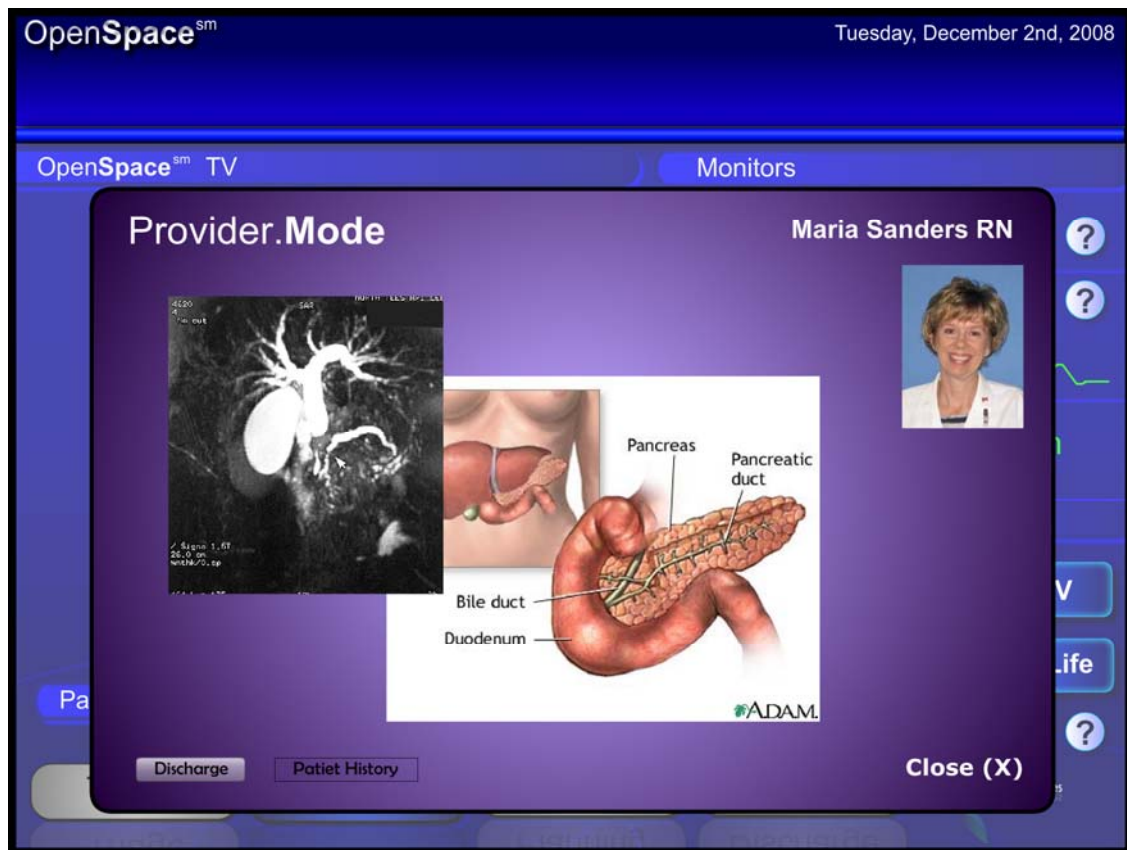


Figure 2. Open Space – Provider mode

On the backend management of this application, we envision a tool that allows providers to manage their own generated content (such as videos) and to customize the screen that the patients see in their rooms, what could be called the “theme.” We also propose to allow the exchange of content and themes with other ERs. This will help hospitals with less experience and money to benefit from shared content, and corporations could conceivably share on a pay service, like shareware or licensing.

CHALLENGES AND OPPORTUNITIES

The challenge for this tool to be successful is two fold. One, it would need to mesh with the various computerized systems in hospitals. It would also need a large amount of content to be prefabricated before a kind of Wiki service could be implemented, where providers could begin adding and editing their own.

There are many potential opportunities for Open Space to evolve into a business model:

- Potential for more advanced self-service features, pay-per-view, special advertisement and education applications
- Advanced customer service and marketing potential such as surveys, patient suggestions, testimonials to integrate with existent business practice

A number of support structures and content providers would benefit from an application such as this, selling video content or formatting text or themes to a hospitals needs

Other challenges, some which come up during the presentations were questions about whether or not this application might reduce personal provider communication with patients or how a seeing impaired individual would interact with the interface. Both of these are excellent questions, though solvable given time to research. Future directions could include testing the prototype with users and moving into a planning and implementation stage. Just what would there

need to be to interface this application with current systems? Does there need to be an industry standard to get everything working together? Who would be interested in this application? And how much would this benefit the provider in terms of a return on investment? We believe that if this application is shown to improve customer satisfaction and attracts patients to one hospital over others, there could certainly be a large need and desire for Open Space.

REFERENCES

- [1] Gavin, K. "After ER visit, many patients in a fog, U-M study finds". Annals of Emergency Medicine, July 2008
- [2] Williams Marvinna, RN, Perkins and Will Architects. Personal interview, October 2008
- [3] Margolis Marilyn, RN, MN, Director of Operations, Emory University Hospital. Personal interview, October 2008
- [4] Ackermann Jeremy, MD, PhD, Assistant Professor of Emergency Medicine, Emory University
- [5] Visit to Emory University Hospital
- [6] Visit to Emory Crawford Long Hospital

Pictures from ER Demo Day.

